

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (original): A method for producing a steel ingot, which comprises the steps of:
forming a magnesium oxide, in which molten steel is adjusted to contain a sufficient amount of Mg to make oxides admixed in the molten steel so as to have a chemical composition a primary component of which is MgO; and
dissociating the magnesium oxide contained in the molten metal into Mg and oxygen by making a degree of vacuum of the melting environment higher than that of the former process of forming a magnesium oxide whereby making a Mg content in the molten steel to be not more than 50% of that in the former process of forming a magnesium oxide.
2. (original): The method according to claim 1, wherein the first step of forming a magnesium oxide comprises casting the molten steel after adjusting it, the step of forming a magnesium oxide being referred to as "a primary melting process", and the second step of dissociating the magnesium oxide is carried out by remelting the cast steel under a degree of vacuum higher than that of the primary melting process, whereby dissociating the magnesium oxide contained in the molten metal into Mg and oxygen thereby making a Mg content in the molten steel to be not more than 50% of that in the primary melting process.
3. (original): The method according to claim 2, wherein the remelting is of a vacuum arc remelting.
4. (currently amended): The method according to claim 2 ~~or 3~~, wherein the steel ingot contains a nitride forming element as a component of the steel.
5. (currently amended): The method according to ~~any one of claims 1 to 4~~claim 1,

wherein the degree of vacuum in the first step of forming a magnesium oxide is 6 kPa to 60 kPa and the degree of vacuum in the second step of dissociating the magnesium oxide is lowered to less than 0.6 kPa.

6. (currently amended): The method according to ~~any one of claims 1 to 5~~claim 1, wherein the relationship between an amount of Mg (Mg_{OXI}) and an amount of Al (Al_{OXI}) is adjusted in the first step of forming a magnesium oxide so as to meet the following equation:

$$Al_{OXI} \text{ (mass ppm)} / Mg_{OXI} \text{ (mass ppm)} = 5 \text{ to } 100.$$

7. (currently amended): The method according to ~~any one of claims 1 to 6~~claim 1, wherein Mg is added into the molten steel as a Ni-Mg alloy which contains from exclusive zero to not more than 20 mass % of Mg.

8. (currently amended): The method according to ~~any one of claims 1 to 7~~claim 1, wherein the steel ingot contains 0.01 to 6 mass % of Al.

9. (currently amended): The method according to ~~any one of claims 1 to 8~~claim 1, wherein the steel ingot contains 0.1 to 2 mass % of Ti.

10. (currently amended): The method according to ~~any one of claims 1 to 9~~claim 1, wherein the steel ingot is of a maraging steel.

11. (currently amended): The method according to ~~any one of claims 1 to 9~~claim 1, wherein the steel ingot is of a tool steel.

12. (original): The method according to claim 10, wherein the maraging steel consists essentially of, by mass, less than 10 ppm of O (oxygen), less than 15 ppm of N (nitrogen), not more than 0.01% C, 0.3 to 2.0% or less of Ti, 8.0 to 22.0% of Ni, 5.0 to 20.0% of Co, 2.0 to 9.0% of Mo, 0.01 to 1.7% of Al, and the balancer of Fe and unavoidable impurities.